

What Is Claimed Is:

1. A connecting lead for a sensor, in particular for a sensor for determining a physical property of a measured gas, in particular for determining the oxygen content or temperature in the exhaust gas of internal combustion engines, comprising a sheathing tube (13), at least two electrical conductors (14) extending in the sheathing tube (13), and insulating means that electrically insulate the electrical conductors (14) from one another and from the sheathing tube (13),

wherein the insulating means have a plurality of insulating elements (15), braced against one another, that contain at least two through holes (16) through each of which one electrical conductor (14) is guided.

2. The connecting lead as recited in Claim 1, wherein the insulating elements (15) are braced against one another in one element subregion and have, in the other element subregion remaining in the bracing plane, a clearance from one another that increases toward the element periphery.

3. The connecting lead as recited in Claim 1 or 2, wherein the insulating elements (15) are at least partially braced with their outer periphery in the sheathing tube (13).

4. The connecting lead as recited in Claim 2 or 3, wherein the insulating elements are embodied as insulating disks (15) whose disk surfaces (151, 152) rest against one another; and of the disk surfaces (151, 152), at least one disk surface is beveled toward the disk center.

5. The connecting lead as recited in Claim 4, wherein the through holes (16) in each insulating disk (15) are disposed in such a way that their hole axes (161) lie on one diameter line.

6. The connecting lead as recited in Claim 5, wherein the bevels in the side surfaces (151, 152) are made in such a way that on each disk surface (151, 152), a parallel surface (151b, 152b) extending at right angles to the hole axes (16) and an oblique surface (151a, 152a) angled with respect thereto are present, each extending as far as the diameter line defining the hole axes (161) of the through holes (16).

7. The connecting lead as recited in Claim 5 or 6, wherein the insulating disks (15) have on their peripheral surfaces (154) a respective flat surface (154a) that extends parallel to the diameter line defining the hole axes (161) of the through holes (16).

8. The connecting lead as defined in one of Claims 4 through 7,

wherein the insulating disks (15) each have a through opening (17); the through openings (17) in the insulating disks (15) resting against one another are mutually aligned; and a preferably round spring rod (20), which is retained in axially nondisplaceable fashion in the sheathing tube (13), is guided through the through holes (17).

9. The connecting lead as recited in Claim 6 and 8, wherein the through openings (17) are disposed in the region of the straight surfaces (151b, 152b) of the insulating disks (15), preferably with a radial spacing from the diameter line defining the hole axes (161) of the through holes (16).

10. The connecting lead as recited in one of Claims 4 through 9, wherein each insulating disk (15) has, on disk surfaces (151, 152) facing away from one another, respectively a concave indentation (18) and a convex protrusion (19) which are embodied in such a way that the indentations (18) and protrusions (19) of insulating disks (15) resting against one another engage conformingly into one another.

11. The connecting lead as recited in Claim 10, wherein the concave indentations (18) and the convex protrusions (19) respectively surround the entrance openings and exit openings of the through holes (16) in the insulating disks (15).

12. The connecting lead as recited in one of Claims 4 through 11, wherein the two outer ones of the insulating disks (15) resting against one another are braced axially in the sheathing tube (13).

13. The connecting lead as recited in Claim 12, wherein the bracing of the outer insulating disk (15) at the one end (12) of the sheathing tube (13) is accomplished by a seal element (30) made of electrically insulating material and pressed into the sheathing tube (13).

14. The connecting lead as recited in Claim 13, wherein the seal element (30) has on its periphery circumferential sealing lips (301), axially spaced apart from one another, that press against the inner wall of the sheathing tube (13).

15. The connecting lead as recited in one of Claims 12 through 14, wherein the bracing of the outer insulating disk (15) at the other end (11) of the sheathing tube (13) is accomplished by an insulating element (21) that braces against the sheathing tube (13).

16. The connecting lead as recited in Claim 15, wherein the insulating element (21) has an axial through orifice (31), aligned with the through openings (17) in the insulating disks (15), through which the spring rod (20) is guided.

17. The connecting lead as recited in Claim 15 or 16, wherein the other end (11) of the sheathing tube (13) is closed off by at least one end disk (22), made of electrically insulating material and resting axially against the insulating element (21), that exhibits a disposition of through holes (23) corresponding to a desired contacting pattern of the electrical conductors (14) emerging from the sheathing tube (13); and through orifices (26) are introduced into the insulating element (21) for passage of the electrical conductors (14), and create a transition from the exit openings of the through holes (16) in the adjacent insulating disk (15) to the entrance openings of the through holes (23) in the adjacent end disk (22).
18. The connecting lead as recited in one of Claims 13 through 17 and Claim 14, wherein the spring rod (20) is braced axially against the end disk (22) and against the seal element (30).
19. The connecting lead as recited in Claim 17 or 18, wherein the sheathing tube (13) is crimped over onto the end disk (22).
20. The connecting lead as recited in one of Claims 13 through 19, wherein the electrical conductors (14) are each joined to a connecting cable (29) by ultrasonic welding; and the seal element (30) surrounds the joining points and the connecting cables (29) are guided out of the seal element (30).
21. The connecting lead as recited in one of Claims 17 through 20, wherein the insulating element (21) and the at least one end disk (22) have, on disk surfaces (211, 212 and 221, 222) facing away from another, respectively a concave indentation (24 and 27) and a convex protrusion (25) having an identical geometry adapted to the indentations (18) and protrusions (19) on the insulating disks (15).